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located on opposing sides of the flexible layer and the polymeric material extending from the first impact absorbing members to the second impact absorbing members

73. The method of claim 72 wherein the flexible layer is stretchable and elastic.

#### REMARKS

This Amendment is submitted in response to the Office Action dated July 16, 2002. In the Office Action, the Examiner rejected claims 1-53. With this Amendment, claims 2-5 are canceled; claims 1, 7, 20, 28, 34-35, and 46 are amended; and new claims 53-73 are added. Upon entry of this Amendment, the above-identified application will include claims 1 and 6-73.

#### ***Examiner's Comments About Applicant's Priority Claim***

In the Office Action, the Examiner alleged that Applicant did not make a proper claim to priority under 35 U.S.C. §119(e) from U.S. Provisional Patent Application No. 60/151,448 that was filed on August 30, 1999. The Examiner's specific comments in this regard were:

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 C.F.R. 1.78(a) and (a)(5)).

Despite the Examiner's comments, Applicant did indeed make a proper claim to priority under 35 U.S.C. §119(e) from U.S. Provisional Patent Application No. 60/151,448 that was filed on August 30, 1999.

Applicant filed a file data sheet on March 16, 2001, when the above-identified application was originally filed. A copy of the file data sheet is attached as Exhibit A. The above-identified application is a national entry under 35 U.S.C. §371 of PCT US00/23519 filed on August 25, 2000. On page 2 of the file data sheet of Exhibit A, a statement is included that states this

national entry (the above-identified application): "claim benefit of 60/151,448" that has a filing date of "August 30, 1999." A copy of a return receipt postcard that includes the date stamp of the U.S. Patent and Trademark Office and designates the above-identified application as "09/787,497" is attached as Exhibit B. This return receipt postcard of Exhibit B lists the two page file data sheet of Exhibit A. Since this postcard of Exhibit B is itemized and bears the date stamp of the U.S. Patent and Trademark Office, this return receipt postcard meets the requirements of MPEP §503, 8<sup>th</sup> Edition, August, 2001, that provide requirements for the return receipt postcard procedure.

Consequently, this itemized and date-stamped return receipt postcard of Exhibit B demonstrates the two page file data sheet of Exhibit A bearing the priority claim to provisional patent application No. 60/151,448 was indeed filed and received by the U.S. Patent and Trademark Office. The foregoing comments are believed to adequately address the Examiner's comments about the above-identified application allegedly not including a proper claim to priority under 35 U.S.C. §119(e).

***Examiner's Comments About Applicant's Initial Information Disclosure Statement***

In the Office Action, the Examiner alleged the U.S. Patent and Trademark Office did not receive or had lost the references that Applicant supplied along with the Information Disclosure Statement that Applicant filed on July 10, 2001. The Examiner's specific comments in this regard were:

2. The references filed with the IDS on July 13, 2001 are no longer matched with the file or were lost during mailing. The Examiner has considered the U.S. Patent references listed and crossed out reference to the non-patent literature on the 1449. If application supplies copies of the listed non-patent literature, the 1449 will be revised to indicate that the references have been considered.

Despite the Examiner's allegation, the U.S. Patent and Trademark Office did in fact receive the references that Applicant supplied along with the Information Disclosure Statement Applicant filed on July 10, 2001. Therefore, it appears the U.S. Patent and Trademark Office instead lost or misplaced the references that accompanied the Information Disclosure Statement Applicant filed on July 10, 2001.

A copy of the Information Disclosure Statement that Applicant filed on July 10, 2001, is attached as Exhibit C. This Information Disclosure Statement of Exhibit C comprising the page entitled "Information Disclosure Statement" along with three separate pages of form PTO-1449. These three pages of form PTO-1449 list a total of seventy-six different references extending from item AA to item CX. A return receipt postcard that was filed on July 10, 2001 along with this Information Disclosure Statement of Exhibit C is attached as Exhibit D. This return receipt postcard of Exhibit D bears the date stamp of the U.S. Patent and Trademark Office and also is specifically itemized to indicate that "76 references" and the Information Disclosure Statement that consisted of "1 page" with "3 pages" of "attached form PTO-1449" were included when the Information Disclosure Statement was filed.

This postcard of Exhibit D meets the requirements of the return receipt postcard procedures stated in MPEP §503 and thus establishes that the Information Disclosure Statement along with all 76 references listed in the Information Disclosure Statement were in fact received by the U.S. Patent and Trademark Office. Therefore, it appears the U.S. Patent and Trademark Office lost or misplaced the 76 references that accompanied the Information Disclosure Statement Applicant filed on July 10, 2001.

Nonetheless, despite the apparent loss of these references by the U.S. Patent and Trademark Office, Applicant has attached copies of the non-patent literature listed on page 3 of the form PTO-1449 at items CM to CX, as requested by the Examiner. Consequently, Applicant respectfully requests that the Examiner consider these references and note on Applicant's Information-Disclosure Statement that was filed on July 10, 2001 that these twelve non-patent references have in fact have been considered by the Examiner.

***Claim Rejections Under 35 U.S.C. §102(b) Based Upon The Dillon Patent***

In the Office Action, the Examiner rejected claims 1, 20-21, 29, and 34-37 under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3,746,605 to Dillon et al. (subsequently referred to as the "Dillon patent"):

6. Claims 1, 20-21, 29, and 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Dillon et al. (U.S. Patent No. 3,746,605).

Despite the Examiner's allegation, the Dillon patent does not disclose each and every feature required by claims 1, 20-21, 29, and 34-37 and consequently does not anticipate any of claims 1, 20-21, 29, and 34-37.

Claim 1 that the Examiner has rejected based upon the Dillon patent reads as follows:

*1. (Amended) An impact absorbing composite, the impact absorbing composite comprising:*

- a plurality of impact absorbing members, the impact absorbing members being solid, and predominately free of voids; and*
- a flexible layer, each impact absorbing member attached to the flexible layer.*

Claim 1 thus requires that the specified impact absorbing members be "solid, and predominately free of voids." Claim 1 also requires that each impact absorbing member be "attached to the flexible layer." As opposed to the solid impact absorbing members that are predominately free of voids in accordance with claim 1, the Dillon patent discloses cellular protrusions 12 that are each hollow and open and predominately consist of a void. This open void configuration of the cellular protrusions 12 allows air to pass from cell to cell and prevent cell rupture under pressure. (Col. 4, lines 21-23). Further explanation of the open void area within each cellular protrusion is provided in the Dillon patent where it is described that air passages 30 exist and "permit air to pass from one cell to the next, as a load is applied to withstand the impact . . . ." (Col. 4, lines 24-30).

Other discussion about the open void nature of the cellular protrusions that allows air passage from one cellular protrusion to another is provided at, where the cellular protrusions are defined in terms of vertical sidewalls that terminate in thin membranes at their outwardly projecting ends. (Col. 2, lines 4-11). The vertical walls of the cellular protrusions collectively define the open

void area within each cellular protrusion. Further discussion about the air flow between different cellular protrusions is provided at col. 2, lines 43-57. Also, at col. 4, line 62, through col. 5, line 2, in combination with Figures 6 and 7, arrows are depicted showing air movement into and out of different cellular protrusions that could not occur unless these cellular protrusions were open and included void areas defined by the exterior walls of the cellular protrusions.

These comments demonstrate that the cellular protrusions of the Dillon patent each have an open void area that supports air flow between different cellular protrusions, which is diametrically opposed to the "solid, and predominately free of void" nature of the impact absorbing members defined in claim 1. Consequently, the Dillon patent clearly does not disclose each and every feature required by claim 1 and therefore does not anticipate claim 1. Similar comments apply with regard to claim 34 that likewise specifies "the impact absorbing members being solid and predominately free of voids."

Next, claim 20 that the Examiner rejected based upon the Dillon patent under 35 U.S.C. §102(b) reads as follows:

20. *(Amended) An impact absorbing composite, the impact absorbing composite comprising:*

*a plurality of first impact absorbing members, the first impact absorbing members formed of a polymeric material;*

*a plurality of second impact absorbing members, the second impact absorbing members formed of the polymeric material; and*

*a flexible layer, each first impact absorbing member and each second impact absorbing member attached to the flexible layer and the polymeric material extending through the flexible layer.*

Claim 20 thus requires both first impact absorbing members and second impact absorbing members that are formed of the specified polymeric material. Claim 20 also requires a flexible layer where the first impact absorbing members and the second impact absorbing members are attached to the flexible layer. Finally, claim 20 specifies the polymeric material that the first impact absorbing members and the second impact absorbing members are formed of must extend "through the flexible layer." The Dillon patent does not disclose the structural details of claim 20 that requires extension

of the polymeric material used to form the first and second impact absorbing members "through the flexible layer." At Figure 4, the Dillon patent discloses cellular protrusions 12 located on opposing sides of the permeable layer 40. At column 4, lines 39-45, the Dillon patent discloses that this structure of Figure 4 may be obtained by pressure rolling the sheets containing the cellular protrusions while these sheets are molten or semi-molten, to force the permeable sheet against the molten or semi-molten cellular protrusion sheet.

This passage of the Dillon patent does not disclose anything about the material of the molten cellular protrusion sheets being pressed together in such fashion to cause the molten material of cellular protrusions on opposing sides of the permeable sheet to be forced into contact in a way that would cause the molten material to extend through the permeable sheet. Thus, this passage from column 4 of the Dillon patent does not disclose the details required by claim 20 regarding polymeric material extending "through the flexible layer." The structure formed in the example of column 5 does not pertain to the structure of Figure 4, that excludes the impermeable backing sheet, since the example of column 5 specifically includes the impermeable backing sheet.

Thus, there is no disclosure in the Dillon patent about this structure of Figure 4 being formed in a way that causes polymeric material of the cellular protrusion sheets on opposing sides of the permeable layer 40 to be formed in a manner that causes the polymeric material of these opposing cellular protrusion sheets to be pressed through the permeable layer or otherwise extend "through the flexible layer," as claim 20 requires. Clearly, the Dillon patent does not disclose the details of claim 20 about "the polymeric material extending through the flexible layer." Therefore, the Dillon patent does not disclose each and every feature of claim 20 and consequently does not anticipate claim 20.

Next, claim 29 that the Examiner rejected under 35 U.S.C. §102(b) based upon the Dillon patent reads as follows:

29. *An impact absorbing composite, the impact absorbing composite comprising:*  
*a plurality of impact absorbing members; and*  
*a flexible layer, the flexible layer extending through each impact absorbing member and each impact absorbing member attached to the flexible layer.*

Claim 29 thus requires a plurality of impact absorbing members along with the flexible layer. Claim 29 further requires that the flexible layer extend through each impact absorbing members. As indicated above in relation to claim 20, the Dillon patent only discloses attachment of cellular protrusion sheets to opposing sides of the permeable layer 40 and does not disclose anything about the polymeric material of the cellular protrusion sheets located on opposing sides of the permeable layer 40 being pressed through the permeable layer 40. Thus, the Dillon patent does not disclose connection of the cellular protrusion sheets located on opposing sides of the permeable layer in a manner that would materially link aligned cellular protrusions of the opposing cellular protrusion sheets with each other. Thus, the Dillon patent does not disclose integration of cellular protrusions on opposing sides of the permeable layer 40 with each other in a manner that would effectively cause aligned opposing cellular protrusions to merge into a single cellular protrusion, with the permeable layer passing there-between.

Instead, the Dillon merely discloses attachment of separate and distinct cellular protrusions onto opposing sides of the permeable layer. The fact that opposing cellular protrusions may nevertheless interact with each other from time to time does not negate this observation. Indeed, the Figure 4 structure of the Dillon patent cannot disclose the "flexible layer extending through each impacted absorbing member" requirement of claim 29 unless opposing, aligned cellular protrusions of the Dillon patent are actually merged by virtue of polymeric material merger through the permeable layer. This merger detail is not disclosed by the Dillon patent and consequently the Dillon patent merely discloses attachment of cellular protrusions on opposing sides of the passage layer 40, as opposed to passage of the passage layer 40 through a single cellular protrusion formed of the same material that extends from one portion of the cellular protrusion through the permeable layer to the other portion of the cellular protrusion.

The foregoing comments demonstrate the Dillon patent does not disclose each and every feature required by claim 29. Consequently, the Dillon patent does not anticipate claim 29. Related comments apply to claim 36 that similarly requires a flexible layer that passes through "each impact absorbing members."

Next, claim 28 that the Examiner has rejected under 35 U.S.C. §102(b) based upon the Dillon patent reads as follows:

*28. (Amended) The impact absorbing composite of claim 20 wherein the polymeric material extends continuously between any first impact absorbing members and second impact absorbing members that are in registry with each other on opposing sides of the flexible layer.*

Claim 28 thus requires continuous extension of the polymeric material between any impacting absorbing members that are in register with each other on opposing sides of the flexible layer. Applicant refers back to the discussion above with regard to claim 20. As pointed out in this prior discussion, the Dillon does not disclose any such passage of polymeric material through the permeable sheet of the Dillon patent. Instead, the pressing technique of the Dillon patent for attaching the different cellular protrusions to the opposing sides of the permeable sheet merely discloses attachment of the cellular protrusions to the opposing sides of the permeable sheet, as opposed to the continuous extension of the polymeric material between opposing cellular protrusions, as required by claim 28. The Examiner does allege that the impact elements of the Dillon patent "are joined through the sheet." However, there is simply no support in the Dillon patent for this proposition of the Examiner. This is merely a suggestion on the Examiner, that is not based upon any disclosure in the Dillon patent and is unsupported by the evidence.

The Dillon patent does not disclose continuous extension of polymeric material through the permeable layer between opposing cellular protrusions. Therefore, the Dillon patent does not disclose all of the features required by claim 28 and consequently does not anticipate the invention of the above-identified application, as defined in claim 28. Related comments apply to claim 35 that similarly requires: "the polymeric material [of the first impact absorbing members and of the second impact absorbing members] extending through the flexible layer."



Finally, claim 37 that the Examiner rejected under 35 U.S.C. §102(b) based upon the Dillon patent reads as follows:

37. *A method of forming an impact absorbing composite, the method comprising:*

*placing a flexible layer into a molding apparatus, the molding apparatus having a plurality of first surfaces that define a plurality of first mold cavity portions and a second surface that defines a second mold cavity portion and, the flexible layer positioned between the first mold cavity portions and the second mold cavity portion, and the first mold cavity portions and the second mold cavity portion collectively forming a mold cavity;*

*placing polymeric resin in the mold cavity;*

*expanding the polymeric resin in the mold cavity to form an impact absorbing composite intermediate, the impact absorbing composite intermediate comprising expanded polymeric resin and the flexible layer; and*

*finishing the impact absorbing composite intermediate to form the impact absorbing composite.*

Claim 37 thus requires a molding apparatus. Claim 37 specifies a number of structural details of the claimed molding apparatus, such as surfaces that define first and second mold cavity portions. Claim 37 also requires a flexible layer that is positioned between the first mold cavity portions and the second mold cavity portion. Claim 37 specifies the first mold cavity portions and the second mold cavity portion collectively form a mold cavity. According to claim 37, polymeric resin is placed in the mold cavity and is then expanded to form an impact absorbing composite intermediate that it thereafter finished to form the impact absorbing composite of the present invention.

The Dillon patent does not ever disclosed any kind of molding apparatus or specify the existence of a mold cavity or placement of polymeric resin in such a mold cavity. In fact, the Dillon patent is lacking in most of the details required by claim 37. In regard to the Examiner's rejection of claims 1-52 under 35 U.S.C. §103(a) based upon the Dillon patent, the Examiner alleged that column 5 of the Dillon patent discloses molding:

Molding to shape and join the impact absorbing elements to the flexible sheet is taught in the example starting in Col. 5.

This molding of the Column 5 example does not even start to disclose the mold apparatus, mold cavity portions, polymeric resin placement, or polymeric resin expansion required by claim 37. Instead, in the example of column 5, the Dillon patent merely discloses vacuum formation of the individual cellular protrusion sheets. This example of the Dillon patent does not disclose anything whatsoever about placement of the permeable sheet 40 within a molding apparatus, as claim 37 requires. Instead, Example 5, with regard to molding, merely concerns molding of the basic cellular protrusion sheets but does not address any molding whatsoever in regard to attachment of the cellular protrusion sheets to the impermeable backing sheet or the permeable layer 40.

Clearly, the details in the Dillon example about molding of the individual cellular protrusion sheets does not disclose the variety of details required by claim 37, such as placement of the flexible layer in the molding apparatus with the flexible layer positioned between the first mold cavity portions and the second mold cavity portion, placement of polymeric resin in the mold cavity, expansion of the polymeric resin in the mold cavity to form the impact absorbing composite intermediate, or finishing of the impact absorbing composite intermediate to form the impact absorbing composite. Thus, the Dillon patent does not disclose each and every detail required by claim 37. Consequently, the Dillon patent does not anticipate claim 37.

Claims 1, 20, 29, and 34-37 are allowable. Claim 21 is also allowable, since claim 21 depends from allowable claim 20. Consequently, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections of claims 1, 20-21, 29 and 34-37 under 35 U.S.C. §102(b) based upon the Dillon patent and that claims 1, 20-21, 29 and 34-37 be allowed.

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***Claim Rejections Under 35 U.S.C. §103(a) Based Upon The Dillon Patent***

In the Office Action, the Examiner rejected claims 1-52 under 35 U.S.C. §103(a) as allegedly being obvious considering the Dillon patent:

4. Claims 1-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon et al. (U.S. Patent No. 3,746,605).

The Examiner's comments in support of this rejection were:

Dillon et al., teaches molded impact elements on both sides of a flexible porous sheet (abstract and Figure 4), with the sheet passing through the middle of elements, which are joined through the sheet. Molding to shape and join the impact absorbing elements to the flexible sheet is taught in the Example starting in column five. The instant invention claims variation in the size and shape of the elements and the material of their construction. Selection of polymeric material and size of the projections is taken as being within the skill of the art depending on the impact to be absorbed.

Despite the Examiner's rejection and comments, the Dillon patent does not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claims 1 and 6-52. As indicated above, Applicant has canceled claims 2-5 from the present application.

As noted above, claim 1 specifies that the impact absorbing members are "solid, and predominately free of voids." As explained above, when addressing the Examiner's rejections under 35 U.S.C. §102(b), the Dillon does not disclose anything about the cellular protrusions being solid or predominately free of voids. Furthermore, there clearly is no teaching, suggestion or motivation to fill in the cellular protrusions of the Dillon patent so that they are solid and predominately free of voids. Such a modification of the Dillon cellular protrusions would destroy the ability to transfer air between adjacent cellular protrusions and would consequently destroy the intended structure and operation of the Dillon cushioning material. Related comments apply equally with regard to claim 34 that also requires the "solid and predominately free of voids" details for the impact absorbing members and to claims 9, 22, 30 and 47 that each specify the impact absorbing members are "free of voids." Consequently, claims 1, 9, 22, 30, 34, and 47 are each believe allowable over the Examiner's present rejection under 35 U.S.C. §103(a) based upon the Dillon patent.

Next, claim 6 specifies: "the impact absorbing members are formed of closed cell polymeric foam," and claim 44 defines the expanded polymeric resin that forms the impact absorbing composite intermediate as comprising "closed cell polymeric foam." The Dillon patent does not disclose anything about the cellular protrusion sheets being formed of foam material, especially not a closed cell polymeric foam. Furthermore, the Examiner has not produced any evidence of any

teaching, suggestion, or motivation to form the cellular protrusion sheets using closed cell polymeric foam. Instead, since the Examiner lacks any such evidence, the Examiner falls back upon the all-knowing "skill of the art" argument:

Selection of polymeric material and size of the projections is taken as being within the skill of the art depending on the impact to be absorbed.

However, this allegation of the Examiner is not an adequate substitute for the required evidence of teaching, suggestion, or motivation.

Indeed, the Dillon actually teaches away from any use of a foam material, such as a closed cell polymeric foam, as the material for the cellular protrusion sheets. Specifically, the only manufacturing process disclosed for combining the cellular protrusion sheets with the impermeable backing sheet and the permeable sheet sandwiched there-between requires the cellular protrusion sheets to be either in a molten or semi-molten state while being pressure rolled to form the cushioning material. However, such an operation would yield a real mess if the cellular protrusion sheet was initially formed as a foam, since the pressing, with the cellular protrusion sheet material in the molten or semi-molten state, would cause this foam to collapse and likely remain collapsed. Thus, any initial attempt to use a foam in the cellular protrusion sheet would be a fruitless waste of effort. Consequently, due to the potential for use of polymeric foam in the cellular protrusion sheet to be a wasted effort, this anticipated wasted effort actually teaches away from any use polymeric foam, such as closed cell polymeric foam, in the cellular protrusion sheets of the Dillon patent.

There is no teaching, suggestion or motivation to employ polymeric foam, especially closed cell polymeric foam, in the cellular protrusion sheets of the Dillon patent. Furthermore, the Dillon patent, as explained above, actually teaches away from any such polymeric foam incorporation in the cellular protrusion sheets. Consequently, the Dillon patent does not teach, suggest, disclose or make obvious the invention of above-identified application, as defined in claims 6 and 44.

Claims 12, 25, 33 and 49 each require impact absorbing members that are "moveable independently with respect to each other." The Dillon patent does not teach, suggest, or disclose any

such independent movement ability for the cellular protrusions. Instead, the relationship of the different cellular protrusions in the Dillon cushioning material is actually designed to allow air passage (i.e., air transfer) between different cells. (Col. 4, lines 21-30). This interdependence between the different cellular protrusions demonstrates that motion of different cellular protrusions is dependent upon most, if not all, other cellular protrusions by virtue of this ability for cushioning fluid (air) to be transferred throughout the array of different cellular protrusions.

The foregoing comments demonstrates that the cellular protrusions of the Dillon patent do not have the independent movement capability required by claims 12, 25, 33 and 49. Furthermore, there is no teaching, suggestion, disclosure or motivation to somehow isolate the different cellular protrusions from interactive air flow since such a modification would destroy the interdependent function that is required for the different cellular protrusions. Consequently, the Dillon does not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claims 12, 25, 33 and 49.

Next, claim 14 specifies that the flexible layer is both "stretchable and elastic." The Dillon patent does not disclose any such stretchability or elasticity for any of the permeable layers, such as the permeable layer 26. Indeed, the sole example provided in the Dillon patent for the permeable layer 26 is "a sheet of porous tissue paper" that is described in the example. (Col. 5, line 29). This tissue paper is otherwise described as a "loose, fibrous sheet 40," in the Dillon patent. (Col. 4, lines 33-34). However, there is no teaching or suggestion that the tissue paper or fibrous sheet be provided with elastic and stretchable characteristics. Indeed, the Examiner has not produced any evidence of any such teaching, suggestion or motivation to substitute an elastic and stretchable structure in place of the basic permeable layer that is described in the Dillon patent. The Examiner has characterized the Dillon permeable sheet as being flexible. However, such a "flexible" characterization of the Dillon permeable sheet is only appropriate insofar as the tissue sheet is drapeable, and consequently "flexible," over three-dimensional shapes. Flexibility does not necessarily equate to "stretchable and elastic." Any contention to the contrary is speculative at best, and speculative observations are insufficient as evidence of obviousness.

The Dillon patent does not teach, suggest or disclose the elastic and stretchable characteristics required by claim 14 for the flexible layer. Consequently, the Dillon does not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claim 14.

Next, claim 28 that the Examiner has rejected under 35 U.S.C. §103(a) based upon the Dillon patent reads as follows:

*28. (Amended) The impact absorbing composite of claim 20 wherein the polymeric material extends continuously between any first impact absorbing members and second impact absorbing members that are in registry with each other on opposing sides of the flexible layer.*

Claim 28 thus requires continuous extension of the polymeric material between any impacting absorbing members that are in registry with each other on opposing sides of the flexible layer. Applicant refers back to the discussion with regard to claim 20 in the discussion of the Examiner's rejections under 35 U.S.C. §102(b) based upon the Dillon patent. As pointed out in this prior discussion, the Dillon does not disclose any passage of polymeric material through the permeable sheet. Instead, the pressing technique of the Dillon patent for attaching the different cellular protrusions to the opposing sides of the permeable sheet merely discloses attachment of the cellular protrusions to the opposing sides of the permeable sheet, as opposed to the continuous extension of the polymeric material between opposing cellular protrusions, as required by claim 28.

Furthermore, there is no teaching, suggestion or motivation to provide such continuous extension of polymeric material through the permeable sheet between opposing cellular protrusions. Indeed, the Examiner has not provided any evidence in support of any such teaching, suggestion or motivation. The Examiner does allege that the impact elements of the Dillon patent "are joined through the sheet." However, there is simply no support in the Dillon patent for this proposition of the Examiner. This is merely a suggestion of the Examiner, that is not based upon any teaching or disclosure in the Dillon patent and is unsupported by the evidence.

The Dillon patent does not teach, suggest or disclose continuous extension of polymeric material through the permeable layer between opposing cellular protrusions. Consequently, the Dillon patent does not teach, suggest, disclose or make obvious the invention of

the above-identified application, as defined in claim 28. Similar comments apply to claim 35 that likewise requires "the polymeric material [of the first impact absorbing members and of the second impact absorbing members] extending through the flexible layer."

Next, claims 29 and 36 each require a flexible layer that passes through "each impact absorbing members." As explained above in regard to the Examiner's rejection of claims 29 and 36 under 35 U.S.C. §102(b), the Dillon patent does not disclose passage of the permeable layer through each of the cellular protrusions. Instead, the Dillon patent merely discloses attachment of opposing cellular protrusions to opposing sides of the permeable layer. There is no teaching, suggestion or motivation to somehow modify the structure of the Dillon cushioning material to force the permeable layer to actually pass through the different cellular protrusions. Indeed, causing the permeable layer to pass through the different cellular protrusions would render the permeable material of the Dillon patent meaningless and without function, since that would leave the backing material attached directly to the individual cellular protrusions and would eliminate the functional advantage of the permeable material that supports pneumatic interconnection between the different cellular protrusions.

Furthermore, with regard to Figure 4 of the Dillon patent where cellular protrusions are attached on opposing sides of the permeable layer, interconnecting the polymeric materials of the opposing cellular protrusions would in practice actually seal the opposing cellular protrusions to each other and prevent adjacent pairs of opposing cellular protrusions from interacting with each other pneumatically. Thus, the desire for pneumatic interaction between adjacent cellular protrusions ~~actually teaches away from the Examiner's suggestion that the Dillon permeable layer passes~~ "through" the different cellular protrusions.

The Dillon patent does not teach, suggestion or disclose passage of the permeable layer through the different cellular protrusions. Consequently, the Dillon patent does not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claims 29 and 36.

Finally, we consider claim 37. Again, claim 37 requires a molding apparatus, a plurality of first mold cavity portions, a second mold cavity portion, a flexible layer positioned

between the first mold cavity portions and the second mold cavity portion, polymeric resin placement in the mold cavity, and polymeric resin expansion, among other details. As explained above in connection with the Examiner's rejection of claim 37 under 35 U.S.C. §102(b), the Dillon patent does not disclose the inventive collection of details defined in claim 37. The Dillon patent instead discloses molding in regard to formation of the individual cellular protrusion sheets, but never mentions anything about formation of the overall cushioning material that includes the permeable sheet in a mold. Instead, the Dillon patent merely teaches compressive lamination of the completed cellular protrusion sheets and the backing and/or permeable layers, where nothing is said about such pressure application occurring in a mold or mold cavity.

Furthermore, there is simply no teaching, suggestion, disclosure or motivation to reconstruct the simple Dillon compressive lamination structure and add numerous details, such as a mold structure like that defined in claim 37, to arrive at the inventive collection of details required by claim 37. In essence, there is simply no teaching, suggestion, motivation or disclosure that the Dillon permeable material and the Dillon cellular protrusion sheets be combined in a mold of any type, and especially not in accordance with the details required by claim 37 where the flexible layer and the polymeric resin used to form the impact absorbing members are necessarily present at the same time in the mold cavity. Instead, the Dillon patent, such as the details presented in the example of column 5, teaches and suggests that the completed cellular protrusion sheets and the permeable layer and/or backing layer are pressed together using the described pressure lamination technique..

The Dillon patent clearly does not teach, suggest or disclose many of the details that are defined in claim 37. Consequently, the Dillon does not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claim 37.

Claims 1, 6, 9, 12, 14, 20, 22, 24-25, 28, 30, 33, 34-37, 44, 47 and 49 are each believed allowable. Claims 7-8, 10-11, 13, 15-19, 21, 23, 26-27, 31-32, 38-43, 45-46, 48 and 50-52 are also believed allowable, since claims 7-8, 10-11, 13, and 15-19 depend from allowable claim 1; since claims 21, 23, and 26-27 each depend from allowable claim 20; since claims 31-32 each depend from allowable claim 29, and since claims 38-43, 45-46, 48, and 50-52 each depend from allowable claim 37. Furthermore, claims 6, 9, 12, 14, 22, 24, 25, 28, 30, 33, 44, 47 and 49 are each



believed allowable for an additional reason, since claims 6, 9, 12, and 14 depend from allowable claim 1; since claims 22, 24-25, and 28 each depend from allowable claim 20; since claims 30 and 33 each depend from allowable claim 29; and since claims 44, 47 and 49 each depend from allowable claim 37. Consequently, Applicant respectfully requests that the Examiner reconsider and withdrawn the rejections of claims 1 and 6-52 under 35 U.S.C. §103(a) based upon the Dillon patent and that claims 1 and 6-52 be allowed.

***New Claims Added by Applicant***

As indicated above, Applicant has added new claims 53-73. Support for the features of new claims 53-73 is believed to exist throughout the above-identified application. Claims 53-73 are each believed allowable. Consequently, Applicant respectfully requests that the Examiner consider and allow new claims 53-73.

**CONCLUSION**

Claims 1 and 6-73 are each believed allowable. Consequently, Applicant respectfully requests reconsideration and allowance of claims 1 and 6-52 along with consideration and allowance of new claims 53-73. The Examiner is invited to contact Applicant's below-named attorney to discuss any aspect of the above-identified application and facilitate allowance of this application.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: November 18, 2002

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**APPENDIX:  
MARKED UP VERSION OF CLAIM AMENDMENTS**

**Claims 2-5 are canceled.**

**Claims 1, 7, 20, 28, 34-35, and 46 are amended as follows:**

1. (Amended) An impact absorbing composite, the impact absorbing composite comprising:  
a plurality of impact absorbing members, the impact absorbing members being solid, and  
predominantly free of voids; and  
a flexible layer, each impact absorbing member attached to [integral with] the flexible layer.
7. (Amended) The impact absorbing composite of claim 6 [7] wherein the closed cell polymeric foam comprises polymeric material that is selected from the group consisting of polystyrene, polyethylene, polypropylene, and any combination of any of these.
20. (Amended) An impact absorbing composite, the impact absorbing composite comprising:  
a plurality of first impact absorbing members, the first impact absorbing members formed  
of a polymeric material;  
a plurality of second impact absorbing members, the second impact absorbing members  
formed of the polymeric material; and  
a flexible layer, each first impact absorbing member and each second impact absorbing member attached to the flexible layer and the polymeric material extending through  
the flexible layer.
28. (Amended) The impact absorbing composite of claim 20 wherein[:  
the first impact absorbing members are formed of a polymeric material;  
the second impact absorbing members are formed of the polymeric material; and  
]the polymeric material extends [extending] continuously between any first impact absorbing members and second impact absorbing members that are in registry with each other on opposing sides of the flexible layer[, the polymeric material extending through the flexible layer].

**APPENDIX:  
MARKED UP VERSION OF CLAIM AMENDMENTS**

34. (Amended) A method of making an impact absorbing composite, the method comprising:  
attaching a plurality of impact absorbing members to a flexible layer, the impact absorbing members being solid and predominantly free of voids[, each impact absorbing member integral with the flexible layer].
35. (Amended) A method of making an impact absorbing composite, the method comprising:  
attaching a plurality of first impact absorbing members to a flexible layer, the first impact absorbing members formed of a polymeric material; and  
attaching a plurality of second impact absorbing members to the [a] flexible layer, the second impact absorbing members formed of the polymeric material, the first impact absorbing members and the second impact absorbing members located on opposing sides of the flexible layer and the polymeric material extending through the flexible layer.
46. (Amended) The method of claim 37 wherein the impact absorbing composite comprises:  
a plurality of first impact absorbing members attached to the flexible layer; and  
a plurality of second impact absorbing members attached to the flexible layer, the first impact absorbing members and the second impact absorbing members attached to opposing sides of the flexible layer.

**New claims 53-73 are added as follows:**

- 53. The impact absorbing composite of claim 29 wherein the flexible layer is stretchable and elastic.--
- 54. The impact absorbing composite of claim 29 wherein the flexible layer comprises a net or open-meshed fabric.--

**APPENDIX:  
MARKED UP VERSION OF CLAIM AMENDMENTS**

- 55. The method of claim 34 wherein the flexible layer is stretchable and elastic.--
- 56. The method of claim 34 wherein the flexible layer comprises a net or open-meshed fabric.--
- 57. The method of claim 35 wherein the flexible layer is stretchable and elastic.--
- 58. The method of claim 36 wherein the flexible layer is stretchable and elastic.--
- 59. The method of claim 36 wherein the flexible layer comprises a net or open-meshed fabric.--
- 60. An impact absorbing composite, the impact absorbing composite comprising:  
a plurality of impact absorbing members, the impact absorbing members comprising a first  
polymeric material; and  
a flexible layer, the flexible layer comprising internal surfaces that define a plurality of holes  
in the flexible layer, a second polymeric material fixed within the holes of the  
flexible layer, the second polymeric material in the holes of the flexible layer bonded  
to the second polymeric material of the impact absorbing members.--
- 61. The impact absorbing composite of claim 60 wherein:  
the flexible layer has a first major surface and a second major surface, the first major surface  
and the second major surface located on opposing sides of the flexible layer; and  
the holes of the flexible layer extend through the first major surface or the second major  
surface.--
- 62. The impact absorbing composite of claim 60 wherein the first polymeric material and the  
second polymeric material are the same.--

**APPENDIX:  
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--63. The impact absorbing composite of claim 60 wherein the flexible layer is stretchable and elastic.--

--64. An impact absorbing composite, the impact absorbing composite comprising:  
a plurality of impact absorbing members, the impact absorbing members comprising a  
polymeric material; and  
a flexible layer, the flexible layer comprising internal surfaces that define a plurality of holes  
in the flexible layer, the polymeric material of the impact absorbing members  
extending into and fixed within the holes of the flexible layer.--

--65. The impact absorbing composite of claim 64 wherein the flexible layer is stretchable and elastic.--

--66. An impact absorbing composite, the impact absorbing composite comprising:  
a plurality of first impact absorbing members, the first impact absorbing members formed  
of a polymeric material;  
a plurality of second impact absorbing members, the second impact absorbing members  
formed of the polymeric material; and  
a flexible layer, each first impact absorbing member and each second impact absorbing  
member attached to opposing sides of the flexible layer and the polymeric material  
extending from the first impact absorbing members to the second impact absorbing  
members.--

--67. The impact absorbing composite of claim 66 wherein the flexible layer is stretchable and elastic.--

**APPENDIX:  
MARKED UP VERSION OF CLAIM AMENDMENTS**

- 68. An impact absorbing composite, the impact absorbing composite comprising:  
an impact absorbing layer, the impact absorbing layer comprising a discontinuous array of  
separate and individual impact absorbing members; and  
a flexible layer, each impact absorbing member attached to the flexible layer.--
- 69. The impact absorbing composite of claim 58 wherein adjacent impact absorbing members  
are discrete and individually distinct from each other.--
- 70. The impact absorbing composite of claim 68 wherein the flexible layer is stretchable and  
elastic.--
- 71. The impact absorbing composite of claim 68 wherein the flexible layer comprises a net or  
open-meshed fabric.--
- 72. A method of making an impact absorbing composite, the method comprising:  
attaching a plurality of first impact absorbing members to a flexible layer, the first impact  
absorbing members formed of a polymeric material; and  
attaching a plurality of second impact absorbing members to the flexible layer, the second  
impact absorbing members formed of the polymeric material, the first impact  
absorbing members and the second impact absorbing members located on opposing  
sides of the flexible layer and the polymeric material extending from the first impact  
absorbing members to the second impact absorbing members.--
- 73. The method of claim 72 wherein the flexible layer is stretchable and elastic.--